

REMARKS/ARGUMENTS

In the Office Action mailed February 19, 2009, claims 1 and 3-14 were rejected. In response, Applicants hereby request reconsideration of the application in view of the Request for Continued Examination (RCE), the claim amendments, and the below-provided remarks. No claims are added or canceled.

For reference, proposed amendments are presented for claims 1, 12, and 13. In particular, the proposed amendment for claim 1 is presented to recite the region between the base region and the substrate is made up of exclusively the drift region of exclusively the first conductivity type. This proposed amendment is supported, for example, by the subject matter illustrated in Fig. 1, which shows the drift region 10 as the only region between the body region 12 and the drain region 8. The proposed amendments for claims 12 and 13 are presented to refer to the “body region” instead of the “base region” for consistency with the terminology used in the independent claim 1. These claims are supported, for example, by the original language of claim 2, which is canceled, as well as by the subject matter described in the specification at page 3, lines 3-8, of the present application.

Drawings

It is unclear from the Office Action whether or not the Examiner intends to state an objection to the drawings. The Office Action states:

It is further noted that one of ordinary skill in the art identifies a plug with a conductive body (as also stated in various dictionaries e.g. IEEE, etc.) and a dielectric filler is NOT conductive . While an Applicant can be his own lexicographer, Applicants’ definition of terms should not be Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term plug in claims 1, 3-14 is used by the claim to mean dielectric filler , while the accepted meaning is conductive body .”
(Underlining added, sic all.)

While the Examiner addresses the ability of Applicants to be their own lexicographers, the Office Action does not explicitly state an objection to the drawings.

In the absence of an explicit objection to the drawings, it appears that the Examiner's remarks regarding the dielectric filler plug are merely for discussion purposes, but are not intended to state a formal objection to the drawings. Therefore, Applicants express appreciation for the Examiner's review of the language of the claims, the drawings, and the corresponding description in the specification. As noted by the Examiner, a dielectric filler is one example of an insulator plug, as recited in the claim.

To the extent that the language in the Office Action might be intended as a formal objection to the drawings, Applicants submit that the language of the claims is clear in light of the drawings and the corresponding description in the specification. Specifically, the claims, specification, and drawings are clear with respect to the recited "insulator plug" because the "insulator plug" is specifically recited in the claims as being an "insulator." See claim 1 ("an insulator plug"). Additionally, the insulator plug of claim 1 is further specified, in one embodiment, to be a "dielectric filler." See claim 4 ("the plug is of dielectric filler filling the trench"). Hence, the discussion in the Office Action of whether or not a "plug" could be conductive is outside of the scope of the specific language of the claims, at least because the claim language itself specifies that the plug is an insulator. Thus, as set forth in Applicants' previous response, the indicated limitation is shown and marked in the drawings. In particular, as noted in the Office Action, the specification of the present application describes aspects of this limitation at page 2, lines 1-15, and page 2, line 31, through page 3, line 2 (paragraphs 7 and 11 of the corresponding published application). Within the cited description, the specification states that the plug may be a dielectric filler. Furthermore, referring to Fig. 1, the specification also describes an oxide dielectric filler 30 to fill the base of the trench 20. Page 5, lines 2-3. Hence, the oxide dielectric filler 30 of Fig. 1 is one example of a plug which fills the base of a trench, as recited in claim 1 of the present application.

Therefore, Applicants respectfully submit that, to the extent that the Office Action might be intended as a formal objection to the drawings, the indicated limitation of claim 1 is adequately shown and marked in the drawings because the example oxide dielectric filler 30 is shown and marked in Fig. 1 of the present application. Accordingly, Applicants respectfully submit that any outstanding objections be withdrawn.

Furthermore, Applicants request that the Examiner specifically acknowledge the withdrawal of the previous drawing objections.

Claim Rejections under 35 U.S.C. 102

Claims 1-10 were rejected under 35 U.S.C. 102(b) as being anticipated by Fujishima (U.S. Pat. No. 5,981,996, hereinafter Fujishima). However, Applicants respectfully submit that these claims are patentable over Fujishima for the reasons provided below.

Independent Claim 1

Claim 1 recites “determining which cells are to be forwarded from said exit FIFOs to a switch fabric in accordance with a throughput-biased arbitration stage” (emphasis added).

Independent Claim 1

Applicants assert that claim 1 is patentable over Fujishima because Fujishima does not disclose all of the limitations of the claim. Claim 1 recites:

An insulated gate field effect transistor, comprising:

- a source region of a first conductivity type;
- a body region of a second conductivity type opposite to the first conductivity type adjacent to the source region;
- a drift region of exclusively the first conductivity type adjacent to the body region;
- a drain region of the first conductivity type adjacent to the drift region, so that body and drift regions are arranged between the source and drain regions, the drain region being of higher doping density than the drift region, and wherein the region between the body region and the drain region is made up of exclusively the drift region of exclusively the first conductivity type; and

insulated trenches extending from the source region through the body region and into the drift region, each trench having sidewalls, and including an insulator on the sidewalls, and a conductive gate electrode between the insulating sidewall,

wherein the base of each trench is filled with an insulator plug adjacent to substantially all of the length of the drift region between the body region and drain region, and the respective gate electrode is provided in the trench over the plug adjacent to the source and body regions.

(Emphasis added.)

In contrast to the indicated limitation of claim 1, Fujishima does not disclose a region between a body region and a drain region is made up of exclusively a drift region of exclusively the first conductivity type. Rather, the device of Fujishima clearly includes two layers of two different conductivity types in the region between the base region (103) and the substrate (101). Fujishima, Fig. 1; col. 8, line 41, through page 9, line 5. Specifically, the device of Fujishima includes both a drift drain region (102) and an impurity layer (111) between the base region (103) and the substrate (101). The drift drain region is an n-type layer. Fujishima, col. 8, lines 53-55. However, the impurity layer is a p-type layer. Fujishima, col. 8, lines 41-44. Thus, the region between the base region and the substrate includes both an n-type layer (i.e., the drift drain region) and a p-type layer (i.e., the impurity layer) with multiple conductivity types. Hence, the device of Fujishima does not include a region between a body region and a drain region which is made up of exclusively a drift region of exclusively one conductivity type.

Therefore, Fujishima does not disclose all of the limitations of the claim because Fujishima does not disclose a region between a body region and a drain region is made up of exclusively a drift region of exclusively a first conductivity type, as recited in the claim. Accordingly, Applicants respectfully assert claim 1 is patentable over Fujishima because Fujishima does not disclose all of the limitations of the claim.

Dependent Claims

Claims 2-14 depend from and incorporate all of the limitations of independent claim 1. Applicants respectfully assert claims 2-14 are allowable based on an allowable base claim. Additionally, each of claims 2-14 may be allowable for further reasons, as described below.

Dependent Claim 13

Applicants assert that claim 13 is patentable over Fujishima because Fujishima does not disclose all of the limitations of the claim. Claim 13 recites:

An insulated gate field effect transistor according to claim 12 wherein the non-uniform doping concentration in the drift region is linearly graded from the higher doping concentration adjacent to the drain region to the lower doping concentration adjacent to the body region.
(Emphasis added.)

In contrast to the indicated limitation, Fujishima does not disclose a linearly graded non-uniform doping concentration in the drift region. To the extent that the doping concentration of Fujishima might be non-uniform, there is no discussion in Fujishima of such non-uniformity following a linear grading. Moreover, the reasoning presented in the Office Action does not specifically address the linear grading recited in the claim. The Office Action states:

Applicants argument w.r.t claim 13 (and 3) that Fujishima does not disclose Fujishima does not support the assertion of inherency because the actual disclosure of Fujishima describes the drain drift region has having a specific surface impurity concentration of 1.1×10^{-7} cm⁻³. Fujishima, col. 8, lines 53-54 is partially correct. But the rejection was based on portions of Fujishima col. 8 lines 45,46-49 and col. 9 line 55 and col. 10 lines 5 and 10 when the complete rejection is considered, Applicants' arguments are not persuasive.
(Underlining added, sic all.)

While the statements in the Office Action refer to separate lines within the disclosure of Fujishima, none of the cited portions of Fujishima addresses a linearly graded non-uniform doping concentration of the drift region. Rather, the cited disclosure in col. 8, lines 45-49, of Fujishima merely refers to a specific surface impurity concentration and a specific diffusion depth. However, the description of a specific surface impurity concentration and diffusion depth is insufficient to disclose linear grading. The cited disclosure in col. 9, line 55, merely refers to a specific electric charge value. However, the description of an electric charge value is insufficient to disclose linear grading of the doping concentration. The cited disclosure in col. 10, lines 5 and 10, merely describes impurity concentrations of known examples, compared with a maximum impurity concentration of the embodiment of Fujishima. However, the references to impurity concentrations of known examples and to the maximum impurity concentration of the embodiment of Fujishima are also insufficient to disclose linear

grading of the doping concentration. Therefore, none of the cited portions of Fujishima discloses a linearly graded non-uniform doping concentration of the drift region. Therefore, Fujishima does not disclose all of the limitations of the claim because Fujishima does not disclose a linearly graded non-uniform doping concentration of the drift region, as recited in the claim. Accordingly, Applicants respectfully submit claim 13 is patentable over Fujishima because Fujishima does not disclose all of the limitations of the claim.

CONCLUSION

Applicants respectfully request reconsideration of the claims in view of the proposed amendments and the remarks made herein. A notice of allowance is earnestly solicited.

At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account **50-4019** pursuant to 37 C.F.R. 1.25. Additionally, please charge any fees to Deposit Account **50-4019** under 37 C.F.R. 1.16, 1.17, 1.19, 1.20 and 1.21.

Respectfully submitted,

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